

REMARKS

Claims 116-118, 120-128, 130, 139-145, 147, 148, 150-160, 162-166 and 184-199 are now pending in the above-referenced patent application. Applicants respectfully request further consideration of these claims, in view of the supplemental amendments set forth above and the following remarks.

Amended Claims

Claims 184 and 185 have been amended to claim preferred embodiments of Applicants' invention having substantial commercial significance, and for which an early Notice of Allowance is desired. As amended, claim 184 requires that the reactant is a gaseous reactant and that the reaction conditions include a temperature of at least about 100 °C. Amended claim 185 requires that the catalysts are inorganic catalysts.

Support for these amendments can be found in the as-filed claims, and throughout the specification, including for example at: p. 40, line 28 through p. 41, line 9 (gaseous reactants); p. 60, lines 32-34 (reaction temperature above about 100 °C); and p.24, line 26 through p. 25, line 29 (inorganic catalysts). No new matter has been added.

New Claims

Claims 196-199 have been added to claim preferred embodiments of Applicants' invention having substantial commercial significance, and for which an early Notice of Allowance is respectfully requested. In particular, claim 196 is directed to similar subject matter as allowed claim 123, but is broadened with respect to not reciting a volume requirement for the microreactor. Likewise, claim 197 is directed to similar subject matter as claim 145, but is broadened in that the claim requires four candidate catalysts being evaluated rather than twenty-five.

Support for these claims can be found in the as-filed claims, and throughout the specification. No new matter has been added.

Acknowledgement

Applicants acknowledge that claims 116-118, 120-128, 130, 139-145, 147, 148, 150-160, 162-166 and 186-195 are allowed.

Rejections under 35 U.S.C. §102(b)

Claims 184 and 185 are said to be anticipated by U.S. Patent No. 5,580,523 to Bard. (*See* paragraph 2 at pages 2-4 of the Office action).

Applicants submit that this basis for rejection is obviated in view of the amendments to claim 184, claim 185 and the following remarks.

Bard does not disclose the invention defined by claim 184. In particular, there is no teaching or suggestion for a method that includes having reactants residing in the reaction cavity under process conditions effective for the chemical reaction of interest for a residence time, τ_{res} , that is longer than the diffusion period, τ_{diff} , for the reaction cavity under such process conditions. As clearly set forth in the instant specification, residence time depends on both reactor design and reactant feed flowrate. (*See* page 60, lines 12-30 of the specification). Although Bard discloses *small-volume reactors*, there is no teaching or suggestion that the *flow rate* through such reactors should be controlled to achieve a residence time that exceeds the diffusion period.

Moreover, Bard does not disclose a method for gaseous reactants or for reaction conditions that include a reaction temperature of more than about 100 °C.

Accordingly, Bard cannot be considered as anticipating Applicants invention, as defined by claim 184.

Rejections under 35 U.S.C. §103(a)

Claims 184 and 185 are likewise said to be obvious over U.S. Patent No. 5,580,523 to Bard. (*See* paragraph 2 at pages 2-4 of the Office action). In particular, the Office action states that the required control of process conditions – to achieve a residence time greater than the diffusion period – is merely “optimization”. *See* page 3 of the Office action, referencing *In re Aller* 105 USPQ 233.

Applicants respectfully disagree with the position set forth in the Office action. The law is clear that obviousness cannot be established based merely on the fact that the reference *could* have been combined or modified, unless the prior art also suggests the desirability of the combination. In re Mills, 16 USPQ2d 1430 (Fed. Cir. 1990). That is, even assuming *arguendo* that the reference teaches a reactor structure that *could* have been used in the manner required by these claims, this does not mean that a person of ordinary skill in the *would* have used it to accomplish the as-claimed methods.

Here, there is no suggestion or motivation that would provide a basis for applying a microreactor like that disclosed in Bard, into a method like that recited in as-filed claim 185 – requiring *control of process conditions* (e.g., flowrate) to achieve a particularly-recited goal (diffusion mixing where the residence time is greater than the contact time). Absent some teaching in the art, this basis for rejection appears to be based on inappropriate hindsight.

Moreover, Applicants have amended claim 184 to advance the prosecution of the instant case. As-amended claim 184 requires gaseous reactants and higher temperatures – conditions under which the reactors disclosed in Bard would not have been operable for their intended purpose (enzymatic conversion). As such, the currently-pending claim 184 and claims depending therefrom are patentable.

Information Disclosure Statement

An Information Disclosure Statement is being filed on the date even herewith listing newly cited references. Consideration of the pending claims is respectfully requested, in particular, in view of the newly cited references.

Equivalents

The amendments to the claim and the arguments presented in supplemental response to the Office action have been made to claim subject matter which the Applicants regard as their invention. By such amendments, the Applicants in no way intend to surrender any range of equivalents beyond that which is needed to patentably distinguish the claimed invention as a whole over the prior art. Applicants expressly reserve patent coverage to all such equivalents that may fall in the range between applicants literal claim recitations and those combinations that would have been obvious in view of the prior art.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

The Examiner is hereby authorized to charge the fees required in connection with this Amendment D to Deposit Account No. 50-0496, in accordance with the Transmittal submitted herewith. The Examiner is also authorized to debit any other fees required in connection with this application, or to credit any overpayment of fees in connection with this application to Deposit Account No. 50-0496.

Respectfully submitted,



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